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WEST EUROPE REPORT SCIENCE AND TECHNOLOGY

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BIOTECHNOLOGY

NEW FRENCH MINISTER REAFFIRMS COMMITMENT TO BIOTECHNOLOGY

Paris LES ECHOS in French 16 Jun 83 p 9

[Text] Just when it looked like the chemistry outlook might be on the verge of easing up with the departure of Albin Chalandon, yesterday Laurent Fabius delivered a report to the Council of Ministers on the biotechnology start-up program. The program, signed in July of 1982 by J.-P. Chevenement, will soon be a year old.

Research efforts for 1983 have already doubled: 95 million francs in allocations versus 47 million in 1982. This has already allowed 890 million francs to be put to use for biotechnology studies alone thanks to government organizations (particularly the CNRS, INSERM, INRA, and the Institut Pasteur). Note that the goal, as defined by J.-P. Chevenement, was to collect 1.4 billion francs in public funds over the entire year.

Mr Fabius pointed out that "Development in biotechnologies will mark the emergence of a new industrial revolution and in the future will play a discriminating role among the large industrialized nations."

With France sharing--along with Great Britain--the responsibility for the international research network in this field since the Versailles summit, it will intensify its efforts in the course of the Ninth Plan, to the point of allocating approximately 200 million francs a year to biotechnologies by the end of the period.

The health, agro-industry, chemistry and energy sectors have been retained as priority sectors. Emphasis is being placed on the development of basic research--France's main asset--and on the necessary acceleration in the transfer of knowledge toward industry.

Aid from the FIM (the Industrial Modernization Fund) has already been solicited since biotechnology also makes up part of its priority activities.

The training of specialists (researchers and engineers) and the development of a regional-level promotion policy are two additional points to be emphasized.

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ELECTRONICS

FRENCH ELECTRONICS FAIL TO PENETRATE U.S. MARKET

Paris LE NOUVEL ECONOMISTE in French 6 Jun 83 p 67

[Article by Anne-Marie Rocco: "France's Chips Are Down in the U.S."]

[Text] From the Silicon Valley in the west, to Route 128 in the east, it would seem that French civil servants have infiltrated as methodically as possible the American electronics and microprocessor world. In addition to France's traditional presence in the U.S.--eleven economic expansion offices and seven scientific services--from now on there will be an affiliate of the PTT [Postal and Telecommunications Administration] in the very heart of Manhattan which has been baptized French Telecom Inc.; a permanent detachment of the National Agency for the Evaluation of Research [Anvar] in Washington, D.C.; three branch offices of Datar [Delegation for Territorial Development and Regional Action] (in New York, Chicago and Los Angeles) and permanent office of the Computer Agency in Sunnyvale, next door to San Francisco. Wasted effort. On the manufacturing side, there are only 42 permanently active French electronics firms in manufacturing--or marketing--in the U.S. They may brag about several isolated achievements like Thomson and Matra who marketed their electronic telephone directory there, or Alta Technology (created 3 years ago by the CGE group), who recently won a contract to supply an automated ticketing system for Buffalo's subway. But sales volume is another matter. Products of French design or manufacture account for 0.3 percent of America's gigantic electronics market (\$160 billion), or, to be very exact, Fr 2 billion for exports and Fr 1 billion for American products under French control, against a deficit of Fr 12 billion in the opposite direction....

The observation was made by Mr Abel Farnoux, one year after he submitted his report "The Electronics Sector" commissioned by the Minister of Industry at the time, Mr Jean-Pierre Chevenement. After France, the U.S. Mr Farnoux recently prepared another report which will serve as the starting point for the mission he has been assigned by the PTT and Industry ministry: to determine the chances of success for French electronics overseas.

The numbers do not leave much room for hope. Up to now, American companies have let "slip out of their hands" only one segment of their domestic market: consumer electronics 62 percent controlled by non-American groups. These are companies

from Southeast Asia or Japan, the only countries to stand up to Uncle Sam on the electronic chip front. Thanks to their strong position in the television, video recorder and hi-fi markets, as well as to their remarkable penetration into components and office automation (photocopiers, in particular), the companies from these two areas have, within a few years' time, succeeded in cornering 10 percent (7 percent for Japan) of the total electronics market in the U.S., or, in real terms, \$16 billion. Quite a feat, because elsewhere, particularly in the most technologically advanced areas of electronics, such as micro-computers, numerical control readiology or computer-assisted design, American companies control more than 70 percent of their own territory. In telephones and data communications, only three firms have made a name for themselves in the U.S.: Japan's Nippon Electric (NEC) and Canada's Northern Telecom and Mitel. In the robotics sector, Sweden's Asea is the only foreign group to own factories in the U.S.... and to control 7 percent of the robot market.

In spite of their repeated efforts, the French have not been able to obtain such tangible results. Thanks to CGR (Thomson group), France holds 2 percent of the American medical electronics market and 6 percent of traditional radiology. This is the best score by a French electronics firm in the U.S. But compare that to the Dutch firm Philips which controls 18 percent of sales in the same field and to the German firm Siemens with 21 percent. In office automation, France claims 10 percent of the mail processing market, which is solely explained by the takeover of the American manufacturer Friden by France's CIT-Alcatel (the CGE group). Thanks to this very strategy of systematic buying, the French have managed to climb to first place (among foreign competitors) in the American market for software and computer services. Quite recently, CISI (computer affiliate of the Atomic Energy Commission) offered itself Wharton Econometrics Forecast Associates, one of the American leaders in computerized economic forecasting. A prestigious acquisition. But, on the whole, French-controlled computer services companies represent only 0.6 percent of the revenue in that profession. With its computers, France manages to export to the U.S. each year the equivalent of \$100 million. That is more than either West Germany or Great Britain. A consolation? More than 50 percent of these exports were the work of "multinationals acting through their French affiliates." Therefore, Mr Farnoux's report suggests, consumer computers and electronics should not be looked to as the key to success. Rather, it would be better to go after components, measurement, electro-acoustics, and even--though it is not certain--telephones. That is, to put it clearly, not much of anything.

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ELECTRONICS

FRENCH 'SILICON VALLEY' DEVELOPING IN GRENOBLE

Rotterdam NRC HANDELSBLAD in Dutch 29 Jul 83 Supplement p 5

[Article by Eric Boogerman and Simon Rozendaal: "Industrial Explosion in the French Silicon Valley"]

[Excerpts] Anyone driving into Grenoble sees a first similarity to the American Silicon Valley: the fact that life is good there. Just like south of San Francisco, the sun often seems to be shining there and the environment is beautiful. Anyone looking up from the silicon chips for a moment is greeted by the Alps.

Europe, which has been plagued by economic adversities eagerly watches this phenomenon, and numerous countries and regions proudly use the designation "European Silicon Valley" or a national equivalent. This is nearly always an exaggeration and usually involves a university and a small electronics business and a half (Enschede) or American companies attracted by fat benefits (Scotland and Ireland).

However, the essence of a real Silicon Valley lies in a large collection of small, rapidly growing, independent companies which constantly branch off into new ones. In Europe, only Grenoble comes anywhere near this kind of activity. A strong electronics and electro-technical industry (among others, Merlin Gerin) has been located there for many years already. Famous technical colleges and universities produce 800 engineers in electronics and computer science every year.

Record

About 10,000 people are working there in micro-electronics, which is considerably less than in the Silicon Valley, but by European standards a record. Moreover, many of them are working for small companies set up by former workers of other companies in the region or -- completely in the style of Silicon Valley -- by recently graduated university students.

Take Pierre Montcuquet. A nice guy, about 25 years old. Before we started talking, he professionally handed me a business card which stated that he is responsible for the industrial applications of ITMI and that he also belongs to the management of that company. ITMI stands for "Industry and Technology of the Intelligent Machine" -- hence, they are involved with robot-type matters.

The small company has been in existence for nearly a year, and was established by a small group of young people from the engineering school in Grenoble, the INPG [National Polytechnic Institute of Grenoble]. The company now consists of nine individuals. Four of them started ITMI in August 1982. Their professor had pointed out to them that they had developed a very intelligent robot programming language and said: why don't you start a company?

ITMI still works closely with the engineering school from where the company started. New laboratory discoveries at the school are applied on a commercial scale by ITMI; and in exchange 10 percent of the company's proceeds go to the INPG.

The company is obviously still at the beginning stage, but yet very promising contracts have already come in. Specifically, an agreement to collaborate has been concluded with Peugeot. Following the example of its major competitor Renault, the manufacturer of Peugeot, Citroen and Talbot cars wants to proceed with a large scale robotization of the automobile factories. In order to bridge the gap, Peugeot wants second generation robots (which can see), and to this effect it has enlisted the services of, among others, ITMI.

Examples

The relationship between the INPG engineering school and the small ITMI company is not unique for this region. That is also a "Silicon Valley" aspect -- there are a number of successful examples in the area which help overcome the thresholds of anxiety. In this case, they modeled themselves after the successful transfer of technology applied by the LETI laboratory.

The Electronics and Data Processing Technology Laboratory [LETI] was established in 1967 by the French atomic agency AEC in order to provide the French nuclear program with knowledge of automation. LETI has long since departed from that basic area and is now one of the most important chip laboratories in France.

A unique phenomenon for Europe is the manner in which the laboratory led to the development of a chip company. In 1972 LETI established the EFCIS [expansion unknown] company, the current manager of LETI, Lacour, who had also been manager of EFCIS for a while, told us. The intention was to market the specialized knowledge which LETI had developed in a certain chip technique (the MOS [expansion unknown] method; Lacour noted: "In this, we were the first in Europe, together with Eindhoven").

This was a success. EFCIS developed into a company employing 800 people, and did so well that it no longer fit under the wings of LETI. In 1976 France's electronics giant, Thomson-Brandt, purchased 35 percent of EFCIS and later took it over completely. The French atomic agency which was officially still represented in EFCIS, officially withdrew from it a few months ago. Alas, such a textbook example of a successful transfer of technology from a laboratory to industry does not occur often enough yet, commented Lacour.

In yet another aspect LETI is a remarkable laboratory which one would expect to find in California rather than in Europe. When a scientific researcher at LETI performs below par, this can mean a humiliating reduction in rank. Thus, last year a laboratory head was reduced to simple researcher because his work was not satisfactory. Lacour: "The laboratory heads here are judged by whether they have been able to conclude industrial contracts. This man had not succeeded in doing this. We have no need here for engineers who can only make something; they also have to know how much something costs."

With 600 workers, LETI is a large company in the French Silicon Valley. The same is true for the Norbert Segard Center (the chip laboratory of the French PTT [Posts, Telegraph and Telephone Administration]), which employs more than 250 researchers. The electronics network further includes the numerous universities and engineering schools in Grenoble, with specializations in robotics, data processing and electronics. The most notable, however, is ZIRST [Industrial Zone for Scientific and Technological Research].

In this "valley of the future" (according to LE MONDE) northeast of Grenoble, 2700 people work in about 70 small innovative companies. ZIRST is the French abbreviation for: industrial zone for scientific and technological research. The zone was set up in the seventies as a French equivalent to "Route 128" near Boston (at that time Silicon Valley was not all that famous yet). Only advanced companies are allowed to locate in the ZIRST valley.

Unlike other areas in Europe with comparable ambitions, the industries are not attracted by tax breaks, nor are there any local financing stimuli. The attraction of the region is psychological: who would not want to work in the "valley of the winners?"

Dynamism

Madame Meyzenc is involved with the innovative happenings in Grenoble via the Prozirst organization. She said: "Only one small company went bankrupt in the ZIRST, but it had only been here 2 weeks. There is a clear dynamism in the valley. They are all young entrepreneurs in growth sectors, full of confidence in the future and with a great deal of initiative. That attracts other young entrepreneurs."

The first generation of ZIRST companies was established around 1975. Since then, a second generation has been added, according to Mrs Meyzenc: small companies which have branched out from the first generation because the appetite of former workers had been whetted and they also wanted to start on their own, and also small companies like ITMI which are spin-offs from universities and engineering schools.

One of the fastest growing ZIRST companies is the manufacturer of microcomputers Symag. The company was set up in 1979 by recently graduated university students who realized that they had developed a good microcomputer for professional use (thus not for the home).

It got going in 1981, and that year Symag achieved a turnover of 8 million francs; last year this figure had gone up to 23 million and for this year it will go up to 42 million, estimated Christian Coeur, director of communication and international affairs. This "international affairs" is not an attempt by small companies to impress. Symag exports microcomputers to the (French speaking) Third World countries. The company employs 45 workers, and by the end of 1983 there will be 55 of them.

Barely 4 years ago, the founders of this company were building their computers at night, after work. Today, Symag is the third microcomputer manufacturer in France. According to Coeur, Symag has only one serious competitor in its specialty (microcomputers for scientific laboratories): Altos Computers in the American Silicon Valley. Coeur added: "They are now a name in the world of microcomputers, but 2 years ago they were as small as we are now. As long as you are in the right slot and you work hard, then in a couple years time you will be going from small to very large."

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ELECTRONICS

JOINT EUROPEAN RESEARCH IN CAO FOR VLSI CIRCUIT DESIGN

Paris AFP SCIENCES in French 19 May 83 pp 23-24

[Text] Paris. A research project on CAO [Computer-Assisted Design] for VLSI [Very Large-Scale Integration] circuits for telecommunications, called CVT [CAO VLSI for telecommunications], is to be conducted under the sponsorship of the EEC [European Economic Community] over the course of the next 3 years by French, Italian, and German organizations.

The project's total cost is estimated at 24 million ECU [European Currency Units]. This is the equivalent of 300 men-years. Half of this cost will be financed by the EEC. France's financial participation has been set at 6.7 million ECU, of which 3.2 million will be the share of the CNET [National Center for Telecommunications Research].

The CNET will head the French public and private laboratories involved in this project. Its staff will work jointly with the staff of the CSVELT of Turin and of the Forschungsinstitut of Darmstadt in the Federal Republic of Germany.

Thomson EFCIS, CIT Alcatel, and Bull are the French industries which will take part in this project along with the LETI [Electronics and Data Processing Technology Laboratory] of the CEA [Atomic Energy Commission], the IMAG [Applied Mathematics Institute of Grenoble], and the INRIA [National Institute for Data Processing and Automation Research].

The project covers the entire architecture of integrated circuits, the languages and data bases for VLSI, testing, and the development of hardware models.

Each country's expertise will be used in these studies. The objective set is to develop during the next 3 years a new CAO system for the rapid design of complex circuits with several hundred thousand transistors, integrating all stages, from the design of the operational level to the finished hardware.

ELECTRONICS

NORWAY TO DEVELOP PARALLEL-PROCESSOR SUPERCOMPUTER BY 1985

Oslo AFTENPOSTEN in Norwegian 12 Jul 83 p 8

[Article by Ulf Peter Hellstrøm: "Supercomputer Under Development at Kjeller"]

[Text] A supercomputer which is capable of performing special demanding computing operations faster than any existing computer in the world is under development at the Defense Department Research Institute (FFI) at Kjeller. Researchers hope that the first prototype will be ready in 1985.

"Radar satellites of the future will provide occasion for watching over the Norwegian continental shelf, navigation and possible oil spills. Computing capacity has hitherto been a bottleneck for processing the large amounts of information from these satellites," relates Research Chief Henry Kjell Johansen of the institute's electronics department.

In Norwegian terms it is a question of a considerable project with financing from several public institutions and businesses. The total expenditures for the project are expected to reach 50 million kroner and then some. Between 15 and 20 men are now working on the project at Kjeller. In addition, there are personnel from Norsk Data and A/S Informasjonskontroll [Information Control, Inc.]. Besides, assignments have been given to, among others, Norsk Regnesentral [Norwegian Computing Center] and ELAB in Trondheim.

If Norway this fall chooses to become a full-fledged member of the European Space Alliance, ESA, and Norwegian researchers gain direct access to signals from the future ERS 1 radar satellite, the lightning-fast computer which is now under development will show to its advantage.

The telemetry station in Tromsø is being expanded for about 30 million kroner so that the signals can be picked up from the satellite.

"The satellite utilizes a special form of radar which registers information and sends it down to the earth in the form of digital signals which have to be put together like pieces of a puzzle. The radar is affected neither by the weather nor the dark. This technology thereby in theory makes room for total surveillance of, for example, traffic on the Norwegian continental shelf."

"In order for the satellite signals to be useful, the large amounts of data, however, must be able to be processed relatively quickly when they are received on the ground. This assumes computers which have the ability to process information quickly."

Abroad there are already supercomputers which are made by large concerns like IBM, Control Data, Amdahl and specialists like Cray. Why should Norwegian researchers, so to speak, re-invent the wheel when it is possible to get facilities from abroad?

"We are not re-inventing the wheel, but are rather utilizing it in a more efficient manner. The fact is, you see, that the general big computers abroad are designed so that they do not manage special computing work fast enough. In order to combine signals from a 100 X 100 km scene with a 25 X 25 m resolution, today's fastest computers at the Jet Propulsion Laboratories in the USA take over 2.5 h. Our goal is 8 min. At one time a general-view picture was made of Oslo Fjord on the basis of signals from the SEASAT satellite. The Nord 100 computer took 700 h to put the pieces of the puzzle together."

"Our basis is an idea which Researcher Yngvar Lundh came up with, that is, to use a varying number of computers in parallel in order to get the processing of the large amounts of data done as quickly as possible. Our philosophy is that the computing work can be done both more quickly and, above all, less expensively by letting smaller and quicker computers work together rather than that a single processor unit in the super class should come to grips with the large amounts of data."

"The large supercomputers abroad are, besides, intended for different uses and they are extremely expensive. The price can reach 100 million kroner," Johansen says.

Thus, there is nothing the matter with the ambitions of researchers at Kjeller in connection with this project, which is discussed in the journal ELEKTRO. The research work is being done under the leadership of Johansen with Oddvar Søråsen as project supervisor. Einar-Arne Herland has developed the mathematics, while Torstein Haugland is supervising the job of developing the software which is to control several coordinated computers.

Norwegian researchers the last few years have gained experience in defining and designing the special customer-specified integrated circuits which are the kingpins in computers. In just these few days the people at Kjeller are putting the finishing touches on the design of some of the most critical components in the computer. Production of the semiconductor components itself, incidentally, is being carried out in Silicon Valley in California. When the components arrive in Norway in a couple of months they will be tested according to all the rules of the game.

"We are building the project on the familiar technology for the production of silicon chips and on so-called VLSI (very large-scale integrated) circuits. The goal is for each computing unit to reach 80 million so-called 'floating point instructions' per second. We have confidence in the fact that the 32-bit processors which we are designing will manage the job," the researchers at Kjeller believe.

ELECTRONICS

BRIEFS

SAGEM-MOTOROLA BUBBLE MEMORIES--Paris. SAGEM [Company for General Applications of Electricity and Mechanics] and Motorola have just signed a long-term cooperation agreement in the field of bubble memories. The first part of this agreement covers the production and sale as a reciprocal second supply source of bubble memory 256 kbit and 1 mbit single-chip housings. These housings are today the smallest available in the world. The compatibility of the products made by the two firms means that the same peripheral LSI [Large-Scale Integration] circuits can be used. SAGEM obtained the support of the French government through the components action program to conduct this civil bubble memory activity as a second source supplier with Motorola. The French firm--8,000 people and 3 billion in turnover in 1982--is involved in this field for it managed to develop its own technology and manufacturing procedure through its cooperation with the LETI [Electronics and Data Processing Technology Laboratory] of the Grenoble Nuclear Research Center of the CEA [Atomic Energy Commission]. For over a year it has been producing 256 kbit and 512 kbit chips used in equipment to be used in space and for military purposes. The U.S. firm, Motorola--3.7 billion in sales--is one of the world's leading producers of electronic equipment. It began its work on bubble memories in 1979. [Text] [Paris AFP SCIENCES in French 19 May 83 p 22] 7679

FRANCE, FRG JOINT DP RESEARCH--During the recent Franco-German summit meeting, delegations from the two countries reached an agreement on the creation of a joint data processing research center, reliable sources from the ministry of industry and research confirmed on 26 May. While no decision has yet been made about the location of this center, both the Germans and French agreed that the Siemens and Bull firms should work together through this center, and that the center would also be open to other participants, particularly the British firm, ICL. The creation of this center will be part of the Community program, ESPRIT. [Text] [Paris AFP SCIENCES in French 26 May 83 p 28] 7679

INDUSTRIAL TECHNOLOGY

FIAT HEAD DISCUSSES IMPACT OF AUTOMATION ON EMPLOYMENT

Duesseldorf WIRTSCHAFTSWOCHE in German 17 Jun 83 p 118

[Interview of Fiat Manager Cesare Annibaldi, by WIRTSCHAFTSWOCHE]

[Text] WIRTSCHAFTSWOCHE interviewed Fiat manager Cesare Annibaldi, the director of labor relations and the officer responsible for relations between the Turin company and the Italian unions, concerning the effects of new technologies on jobs in the automobile industry.

[Question] BMW Chief Eberhard von Kuenheim has described the negative effects of robot application on employment numbers in the automobile industry as "generally exaggerated." What is the outlook at Fiat where over 600 robots are already at work?

[Answer] And by 1984 there will be 800. I think that it must be accepted as a fact today that the new technologies will reduce the number of jobs. Concerning the question of whether this will lead to a drastic reduction in employment, only a tentative yes can be given at this time. For, in the automobile industry in particular, automation can only be carried out gradually in synchronization with new production models and in special areas.

[Question] What does that mean in concrete terms?

[Answer] Here at Fiat Auto, we project an annual surplus of employees of 2 to 3 percent over the next 10 years, or about 2,500 workers. But without doubt, there will still be areas alongside the large and highly automated facilities in which manual labor will play an important role, but not to the same extent as today.

[Question] Do you foresee any possibility of compensating for these effects with social measures?

[Answer] That may again be a temporary remedy, but the new technologies increase our ability to compete since we can produce better and in greater quantity. And of course under better conditions for the workers and at

lower costs which, again, secures jobs. But--the investment for innovation is presently not carried out with greater growth in mind. This is probably somewhat unique in the history of industrial development. Now, Italy is probably a good example of the fact that the problem can not be solved with artificial labor market measures. The level of employment will in the future depend on two factors: market growth and innovative production technologies. At Fiat the loss of jobs through natural fluctuations will only be made up when production climbs above the present figure of 1.1 million automobiles per year.

[Question] What will be the outcome of this on the qualification structure for production employees?

[Answer] Clearly, the elimination of the lowest and hardest work. In all cases it is a transition from direct intervention in the production process to control of the process and maintenance of the machines. In this, the worker will become less a master craftsman and more a manager and coordinator.

[Question] As a mass production facility, Fiat has always had a large crew of lowly qualified workers and a small staff of qualified technicians. Will this not have to change now?

[Answer] The ratio has in no case become worse and will even improve in the future. The percentage of technical positions is naturally limited, which is characteristic of the mass-production organizational pyramid. The fact that Fiat has hired no new employees for a long time and no longer goes outside for technicians can be taken as an indication that the company is fulfilling its needs from within. In the past 2 years 30,000 Fiat employees have undergone some form of retraining.

[Question] Is a shorter work week in the offing?

[Answer] Because of the competitive disadvantage, we could entertain this only if it were adopted internationally: that is, only if it is uniformly adopted by the competition. With 38 hours per week, we have one of the shortest work weeks in Europe. We are in a better position to discuss wage increases than to discuss a shorter work week.

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SCIENCE POLICY

INDUSTRIAL NATIONALIZATION PROGRAM ANALYZED

Nationalized Industries in Red

Paris L'USINE NOUVELLE in French 2 Jun 83 pp 112-113

[Article by Jacques Barraux and Alain Pauche: "How Can the Nationalized Industries Be Saved?"]

[Text] Two years after the nationalization program was launched and 1 year after its completion, the large industrial groups are passing through a dangerous period of disillusionment. An avalanche of deficits, strategic inertia, and a loss of cadres--when it nationalized enterprises, most of which were already suffering; at a good price, the state made a singular gift to their stockholders. Now it claims inability to explain to the taxpayers what it plans to do to reactivate the giant conglomerate for which it is responsible.

"Restructuring the newly nationalized enterprises is out of the question," the government officials have never ceased to insist, in an effort to calm the concerns of the wage earners. "Dangerous language!" is the astonished comment of Lionel Stoleru, who served as a minister under Valery Giscard d'Estaing and is the author of "The Industrial Imperative." "Since the nationalizations have been carried out, let them at least serve some purpose! There is tremendous work to be done to improve the structures of the large groups. This is not the time to freeze their boundary lines."

In fact, the public authorities are already seriously embarked on the re-districting of the empire. The government has very logically put an end to the Saint-Gobain data-processing diversification experiment. It has redistributed all of the chemical activities of the PUK [Pechiney-Ugine-Kuhlmann Company] among Rhone-Poulenc, ELF [Gasoline and Lubricants Company of France]-Aquitaine, CdF-Chimie and EMC. It has pushed the old negotiations between ELF-Aquitaine and the French Oil Company (CFP) concerning the future of ATO and Chloe chemical activities ahead. It has expanded the role of the COGEMA in the nonferrous sector and proposed the launching of competition between Bull and the CGE [General Electric Company] in office computers. In metallurgy, the telephone and aeronautics sectors and in electronic components, it is marking out the guidelines for a strategy for the future.

These undertakings, however numerous, represent only a beginning in this connection. The state is today the main stockholder in some 4300 enterprises, involved in the majority of cases in the competitive sector.

This disparate complex seems a far cry from providing the industrial vanguard and social laboratory which the signatories of the joint program desired. For matters to be different, a clarification of the tasks falling to the stockholding state and the enterprise cadres would be needed. In addition, these cadres themselves would have to be capable of choosing among the somewhat contradictory goals which seem to be assigned to them. Finally, the producer state would have to explain to taxpayers the exact use made of the aid allocated to the public sector. If the owner state refuses to provide clarity, "Italianization" as a phenomenon affecting the large groups might be feared.

State-Public Sector Relations

A year after nationalization, the rules of the game for public enterprises and their sponsorship remain excessively blurred. The "letter of purpose" sent to the heads of the newly nationalized enterprises in March of 1982 stressed the principle of autonomy in group management. A few months later, the chief of state publicly repudiated the excessive intervention of his minister of industry, Jean-Pierre Chevenement, in the activities of these groups. But does a statement of intent suffice to eliminate an age-old tradition of interchange between the state and the industrial groups? The P-DG [presidents and directors general] could easily denounce "the excesses of a meddling bureaucracy," but nationalization is often viewed as the regularization of an illicit relationship between the political authorities and heavy industry.

In principle, the relationship between the nationalized enterprise and its sponsor is to be structured henceforth on the basis of plan contracts. "The contracts make it possible to channel the possible future excesses of the sponsor," it is said at the Ministry of Industry. In fact, the documents involved are too general and too concise to reassure the stockholding state while at the same time giving the P-DG full responsibility.

Thus the daily activities at the new nationalized enterprises are modeled on the empirical pattern of the old ones. The networks are established as a function of the affinities among bodies, and personal problems play a central role. The character of its P-DG determines the liaison methods which will be established between an enterprise and the public authority. The nationalized sector thus resembles a mosaic of developing coalitions, with real power lying with the enterprise staff in some cases, and with the sponsoring bureau in others.

It would be impossible to understand the reorganization of the chemical sector if one knew nothing of the personalities of Albin Chalandon, the P-DG of ELF-Aquitaine, or Rene Granier de Lilliac, P-DG of the CFP. The temperament of Alain Gomez, the young president of Thomson, and that of Georges Pebereau, director general of the CGE, partly explain the new electronics structure. The key to the subtle tactical maneuvers of the PUK lie in the character of Georges Besse. The same is the case with Bernard Hanon, at the state-owned Renault

company, Raymond Levy at USINOR [Metallurgical Union of the North] or, until recent months, Jacques Mitterrand at Aerospatiale. The style of the pro-consuls of nationalized industry may change, but very few have had serious complaints to make about their sponsoring administrations.

"Nationalization works when the builders of empires are given a free hand," Alain Minc, financial director at Saint-Gobain and an advocate of state neo-capitalism, explained recently. "Wherever the nationalized enterprises are submitted to the dictatorship of the bureaus, there is disaster. The French style of nationalization involves lightening the financial burden weighing on the groups in order to give greater freedom to the offensive capacity of the managerial team." Based on this approach, "men count more than plans." So be it! But it is further necessary that the managers in the public sector render an accounting and refrain from abusing the "secret diplomacy" of the large bodies (mines, bridges, financial inspectorate, etc.).

Defining the Goals

Nationalization substantially modifies the operation of enterprise staffs. It has been possible to observe this in groups such as Rhone-Poulenc, Saint-Gobain, or even the CGE, for a year now. The speeches by their presidents are much more "political" than "business" oriented, as if reflecting the desire to please everyone--the press, the financial market, colleagues in the private sector, the trade unions and the stockholding state.

It is true that the government assigns multiple and sometimes contradictory tasks.

In fact, the P-DG are asked to pursue four goals simultaneously: to develop the possibilities of the enterprise, to safeguard employment, to make internal management more democratic, and to participate in the effort to win back the domestic market. "When a stockholder assigns a managerial team too many goals, it is as if he assigned it none," Daniel Zumino, director of the Boston Consulting Group, comments.

The concept of "national interests," when applied to industry and business, is rather difficult to grasp. It is likely in the long run to encourage a policy of strategic caution on the part of managers. And more serious still, it is likely to cause them to lose their sense of priority in allocating resources. Each enterprise tries then to outbid the others with the stockholding state, demanding of it much more money than is needed, in order not to have to deal with a frontal clash with the trade unions or the administration. "The search for maximal self-financing should be the golden rule for any P-DG," Daniel Zumino went on to say. "State aid is only justified for developmental projects explicitly recognized as having priority. For enterprises engaged in competitive activity to appeal to the taxpayers to finish out the month should be regarded as ignominious."

This ignominy is borne by the P-DG in the public sector, it appears, without too much suffering, since the collapse in the 1982 results was followed by a massive appeal for transfusions of fresh money. It is true that the losses of

the public sector were reported, for last year, to exceed the total of state capital contributions and the contributions of their own funds planned both for 1982 and 1983.

It is said that there is irritation at the Ministry of Industry because of the numerous commentaries on the public deficit. Concerning the losses of Renault, the answer is Peugeot, and to those of Thomson, Michelin. But the 36.5 billion francs representing the total losses for the whole of the public sector for 1982 pose a real threat to the entire socialist nationalization experiment. They deprive the reindustrialization project of any meaning. To overcome this handicap, the P-DG must speed up their strategic decisions, must rigorously screen their monetary needs, and must agree to embark upon a long period of unpopularity.

Eleven Giants Going Downhill

Paris L'USINE NOUVELLE in French 2 Jun 83 pp 114-119

[Article by Claude Amalric, Philippe Douroux, Claude Goudier, Georges Le Gall, Patrick Piernaz, and Jean Roume]

[Text] The nationalized groups in the competitive sector had a black year: of 17 pilot enterprises, 11 showed a loss. If the metallurgical sector found itself slightly better off, which was expected, Thomson offers a tragic balance sheet in comparison to its foreign rivals. On the list of leading deficits, the first French electronics group is not far behind the PUK. Two other enterprises in the electronics-data processing sector saw their losses multiplied. They are Bull (formerly CII-HB) and the CGCT [General Telephone Construction Company], whose future has still not been clarified.

The situation of the three chemical companies did not develop between 1981 and 1982. The results achieved by the Mining and Chemical Enterprise (EMC) deteriorated, and those of Rhone-Poulenc improved slightly. And finally, Renault, the "model" for the nationalized companies, "plunged" again in 1982, after 2 years of balance in 1979 and 1980 and a decline in 1981.

The Deficit Groups in 1982 (in millions of francs)

USINOR	- 5,000
SACILOR	- 3,700
PUK	about - 3,000
Thomson	- 2,200
Bull	- 1,351
Renault	- 1,280
CdF-Chimie	- 1,200
EMC	- 950
Rhone-Poulenc	- 318
CGCT	- 298
SNECMA [National Airplane Engine Study and Construction Company]	- 45

Renault

Since 1977, Renault has shown a profit in only 2 fiscal years (1979 and 1980). In 1981-1982, the rate of financing of investments from internal resources dropped to about 30 percent. In 1983-1984, recovery should be rapid if the state-owned company wants to achieve the rate established in the plan contract: 75 percent by 1985 at the latest.

The "model" firm has an ambitious plan. The plan contract signed on 22 February 1983 for the period from 1983 through 1985 pertains not only to private vehicles, but three other sectors as well:

Automobiles. As the sixth largest manufacturer in 1982, with 6.5 percent of the world market and nearly 2 million units, Renault has set as its goal increasing its portion of the market to 7 percent, with production of 2.5 million units. This means that every year a new model must be launched, a factory must be completely remodeled, the position in one country must be expanded and a research and development effort pursued, particularly with regard to consumption, electronics and new materials.

Industrial vehicles. A development plan is to be drafted prior to 30 June.

Agricultural machinery. The prospects will be further specified on the basis of possible cooperation with foreign groups.

Computer-integrated manufacturing. In addition to machine tools, a policy must be defined in the robot sector for the CAO and the CFAO.

In the private vehicle sector, the Renault managers admit that they could not increase their portion of the market either in France (40 percent) or in Europe as a whole (14 percent), where the state-owned company already leads all other makes of car. The goal of 2.5 million units by 1985 will thus necessarily require a substantial increase overseas, and in the United States in particular, where manufacturing began at American Motors in 1982, with the R9 Alliance.

For industrial vehicles as well as farm tractors, the question is the same: Can Renault advance from the level of a French producer to a world-class manufacturer, when up to the present its position has been very mediocre, even in Europe? The question for production automation is the same: Can Renault succeed in becoming something other than a supplier... for the Renault group?

The USINE NOUVELLE Assessment

It is not clear that all these goals can be achieved at the same time. The private automobile remains Renault's strong point. Even in this sector, the challenge to be met is no small one, because the planned growth must be achieved with investments which, in real value, will not, in 1983-1984, exceed their 1980-1982 level.

Consolidated Turnover Figures
(in billions)

1982	1981
104	88

Exports

1982	1981
45.2%	47.6%

Net Balance
(in millions)

1982	1981
-1,280	-690

Personnel

1982	1979
215,000	233,000

Investments
(in billions)

1983	1982
8.9	8.6

General Telephone Construction Company

In the very short run, the future of the CGCT is dictated by the financial aid from the public authorities. Two billion francs are needed, its P-DG, Pierre Lestrade, estimates, if the CGCT is to be viable.

In the middle time range, the enterprise must decide upon one of two earth-based switching exchanges, the CIT-Alcatel E 10-12, or the Thomson-CST [General Radio Company] MT 20-25, while on the other hand diversifying toward the private telephone sector.

For the CGCT, the indicators to be followed are basically political. Will the government release the funds needed to offset the debts (1 billion francs, 80 percent on a short-term basis) of the group, or, a second solution, will the CGCT be linked with one of the two "telephone operators," Thomson-CSF or CIT-Alcatel?

The USINE NOUVELLE Assessment

A billion in debts, 280 million in losses in 1982, and no technology of its own in the second generation telephone switching sector deprive the CGCT of any possibility of remaining autonomous. In fact, its future is closely linked with that of the telephone industry in France. The government, which decided to nationalize an enterprise which was then an affiliate of ITT, but which

seems today to regret this step, will have to take action speedily. Unless it leaves this matter to the CGCT itself, which would then have to choose its "camp" between now and the end of the month.

Consolidated Turnover Figures
(in billions)

1982	1981
2.04	2.2

Exports

1982	1981
23.5%	21%

Net Balance
(in millions)

1982	1981
-298	-14.6

Personnel

1982	1979
9,010	12,000

Investments
(in billions)

1983 (estimate)	1982
--	0.04

Thomson

What can be said about a group assigned a national mission--electronics and television set equipment--which has marked its reorganization with a view to these tasks by the largest deficit in its history? More than 2 billion! Even if 400 million are the result of joint responsibility contracts, if an equal sum has been set aside for depreciation, and if the earlier deficits were exaggerated, such a loss is difficult to understand. Particularly since some of the causes of the 1982 deficit (indemnification for delays on the delivery of telephone equipment, and losses of 600 million on the CGR, the fate of which has even yet not been settled), reveal the situation in which Thomson finds itself. The group is at a crossroads since the general public orientation has been clearly established.

The Thomson-CSF affiliate, which "rescued" the group in earlier years, accounts for 1.9 billion of the total deficit. To the credit of that branch, the orders received last year--42 billion--show an increase of 27 percent over 1981. The general public branch seems better favored. By means of its drastic about face toward Telefunken during the failure of the negotiations with Grundig, Thomson-Brandt assured itself of the minimal size necessary for the profitable production of raw products. Simultaneously, the Moulins factory is bringing out its

first high fidelity series, while the laboratories in Angers and Villingen are developing the 8 mm videotape recorders of tomorrow. The production of JVC mechanical units on license following a recent agreement will give the French group expertise it has heretofore lacked. But this rather pragmatic attitude worries the advocates of purely domestic industry. In fact, the danger would probably lie in waiting for better-known names to test the acceptance of new generations of equipment for the general public.

The USINE NOUVELLE Assessment

Coincidence--the period set by Alain Gomez for bringing about a change in the thinking and the management within his group is 3 years. This is substantially the same as the period at the end of which the success or failure of the technical-commercial choices being made currently will be known.

Consolidated Turnover Figures (in billions)

1982	1981
46.9	43.6

Exports

1982	1981
45% (approximate)	46.1%

Net Balance (in millions)

1982	1981
-2,200	-168

Personnel

1982	1979
130,000	126,300

Investments (in billions)

1983 (estimate)	1982
5,000 (approximate)	5,000

Bull

For the group which leads the ranks in French data processing, the year in progress is the year of the great cleanup, after the billion lost during the 1982 fiscal year.

According to the plan contract signed last 10 February, what was announced on 9 May was much more than an internal redistribution. Under the single name of

Bull, four industrial divisions will henceforth share in the activity: systems, large and medium, Sems (mini-computers); peripheral and subsystems; and finally Transac, which will develop electronic office equipment and micro-computers, in particular with REE. Another novelty is a single commercial management covering the whole of production, instead of the autonomy allowed the divisions in the past.

The plan calls for the predominance of large systems in Bull's activities. But it also provides that 50 percent of the turnover total will be accounted for by Transac and Sems in 1986. One can see the volume of work to be done on a market which is now being heavily disputed. The state, the owner of 96.5 percent of Bull since 3 May, is helping with the conversion with a contribution of 1.5 billion in the form of a capital appropriation. Thus the financial structure is also being modified.

The USINE NOUVELLE Assessment

Among the products being developed which should ensure the success of the enterprise is an extremely compact high-performance magneto-electronic printer (6,000 lines per minute, letter quality). It is expected to be on the market this year. Next year, probably, the first equipment using vertical recording should appear, increasing the capacity of memory disks by a factor of 10, placing Bull among the top world leaders on this market. All these efforts are to be pursued through all the departments, in order to win back a highly sought after clientele. The extent of the marketing network--reported to be second only to that of IBM--will be an important asset in winning back this market.

Consolidated Turnover Figures (in billions)

1982	1981
8,134	7,347

Exports

1982	1981
43.2%	44.2%

Net Balance (in millions)

1982	1981
-1,351	-449

Personnel

1982	1979
21,864	19,054

Investments
(in billions)

1983-1985 (estimate)	1982
3.5 (over 3 years)	1.09

Pechiney-Ugine-Kuhlmann Company

A crisis both structural and situational struck this group in 1981, causing a deficit of 2,506,000,000 francs to develop, as compared to profits of 991 and 607 million the two preceding years. The deficit in 1982 was in the neighborhood of 3 billion. A pruning policy led to turning Ugine Steel over to Sacilor in February of 1982 and to offering various chemical departments to specialized foreign groups (ELF, Rhone-Poulenc, CdF-Chimie, EMC).

The completion of this last-mentioned operation will focus the activities of the PUK on nonferrous products (mainly aluminum, but copper and various nuclear or special metals as well), the production of high-content industrial materials (graphite, magnets) and on the international metallurgical trade. Pursuing an offensive strategy in the aluminum sector, the group has surrendered its American affiliate Howmet Aluminum, and reinvested its dollars in Quebec (in Trois Rivières). However, it has retained Howmet Turbine.

Two main obstacles seem, however, to be hindering the drafting of a plan contract between the PUK and the state. The first is the lack of agreement among the public authorities, the EdF [French Electric Power Company] and the company in allowing the latter a privileged price per kilowatt hour for the electrolysis of aluminum, in line with the prices enjoyed by its main international competitors (the price of electricity in Trois Rivières is very low). The second is the delay on the part of the public authorities in defining a voluntarist long-term national policy in the realm of nonferrous metals supply.

The USINE NOUVELLE Assessment

The limited information available to date reflects, to a much greater extent than the wishes of the three partners involved, the existence of significant progress toward one of the various financial solutions (interlinked EdF and PUK participation, for example) thought up allow the PUK to obtain a competitive price per kilowatt hour, without establishing a precedent for other industries.

Consolidated Turnover Figures
(in billions)

1982	1981
29	41

Exports

1982	1981
65.6%	57.4%

Net Balance
(in millions)

1982	1981
-3,000 (approximate)	-2,500

Personnel

1982	1979
55,254*	91,926

Investments
(in billions)

1983 (estimate)	1982
3.1	2.7

The 1982 figures do not include Ugine Steel (turned over to Sacilor at the beginning of the year) or the chemical branch, which is in the process of being taken over by foreign groups.

*The figure with the chemical sector, but excluding Ugine Steel, would be 72,695.

Mining and Chemical Enterprise

Under the terms of its plan contract, the group should maintain a strong position as a producer and operator on the world potassium chloride and sulfate market, with a high level of domestic production making maximal exploitation of the Alsatian potassium deposit possible.

The EMC must develop its position in the realm of food phosphates and that of chlorinated products, also strengthening its refined chemical activities. An investment program of 1.7 billion francs is planned for the duration of the plan, including scheduled investments to save energy of 320 million francs.

The investment program for this year comes to 390 million francs and will include, in particular, the launching of two important investments: a flotation unit in Alsace for the processing of ore, with energy savings, and participation in the development of a potassium mine in New Brunswick, Canada.

The USINE NOUVELLE Assessment

Despite the difficulties experienced by the Spanish Sanders affiliate and keen competition, the EMC is well placed on the animal feed market, and potassium will remain a strong point for the group for some years yet, since it is the sixth largest world producer. But the chemical activities related to PVC [polyvinyl chloride] are in danger of encountering difficulties in a lack-luster and competitive market.

The EMC should not suffer such substantial losses in 1983. The balance in 1982 should have shown a loss of only 220 million, below that reported for 1981, but because of the depreciation of the CdF-Chimie shares held by the EMC (33 percent of the CdF-Chimie capital), the volume of losses climbed to 950 million.

Consolidated Turnover Figures
(in billions)

1982 9,450	1981 8,500
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Exports

1982 30%	1981 --
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Net Balance
(in millions)

1982 -950	1981 -312
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Personnel

1982 12,300	1979 11,385
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Investments
(in billions)

1983 0.320	1981 --
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Rhone-Poulenc

Under the terms of the plan contract, the chemical group will have as its goal the strengthening of its position in three sectors, on the world level:

Health, in which it must step up its chemical and biochemical research effort.

Refined chemistry (silicones, rare earths and organic fluorine products).

Agrochemistry, with export efforts.

This should be reflected in 3 billion in investments, including 2 billion in France and 1 billion abroad, with the allocation of 60 percent of this sum to refined chemical products, which will be a sector to watch, as well as "health" activities. Let us recall that this group is seeking to establish itself industrially in the United States, with the purchase of a laboratory, a relatively costly operation, in the view of experts.

The USINE NOUVELLE Assessment

Rhone-Poulenc has certain industrial trumps with positions on the very highest world level in animal feeds, plant and human health products. It is also a world leader in rare earths. Abroad, its positions are rather good overall, but they are still too weak on the American market, despite the fact that Mobil has taken over its agrochemical activities.

On the other hand, Rhone-Poulenc is still likely to experience difficult periods in the textile and film sectors. On the financial level, the situation is poor. The net indebtedness exceeded 16 billion francs at the end of 1981, and unless it increases its own funds, one might wonder if the group's funds will match its ambitions.

Consolidated Turnover Figures (in billions)

1982	1981
37.1	32.2

Exports

1982	1981
33%	--

Net Balance (in millions)

1982	1981
-318	-573

Personnel

1982	1979
84,000	106,700

Investments (in billions)

1983	1981
2.7	2.436

National Airplane Engine Study and Construction Company

Maintaining the capacity of the enterprise to produce modern military engines and to consolidate the position won in civilian engines with the CFM 56--these are the two SNECMA goals approved by the state during the signing of the plan contract on 8 April last by Minister of Defense Charles Hernu and Jacques Benichou, president of the SNECMA.

The signing of this plan contract was accompanied by a major financial decision. In 1983, the SNECMA will be the beneficiary of a capital contribution from the state of 200 million francs, and joint loans equal to 100 million. There will be then a contribution of its own funds and those partly its own totaling 300 million, which will somewhat alleviate the financial difficulties of the French manufacturer of aircraft engines, which must cope with a very heavy self-financing responsibility.

At the end of 1982, the firm's indebtedness came to 2,650,000,000 francs. This volume is explained by the fact that the national enterprise simultaneously launched two major engine lines, the M53 (military) and the CFM 56 (civilian), and undertook the modernization of its production units in depth.

The future of the enterprise is closely linked with that of the air frame manufacturers. Each Mirage 2000 sold means an equal number of M53 jet engines manufactured, not counting replacement engines. But the view of the French engine mechanic will be less and less limited to the controls made by Marcel Dassault-Breguet Aircraft. In fact, the firm of Corbeil is in the process of gradually rebalancing its military and civilian activities. This company, which carried out more than 80 percent of its activities in the military sector in 1981, may have achieved a 50-50 distribution of the two activities by 1984-1985.

This is the wish of the current president, who holds one trump: the CFM 56 engine, developed jointly with General Electric. This is an engine with a promising future: more than 700 have been ordered, both in the second basic model (11 tons of thrust) for the replacement of DC8 engines and the KC 135 and C 135 supply ships (a market quite remote still from saturation) and in the nine-ton thrust version 3, for the replacement of Boeing 737-300 engines. The fourth model, still being developed, will equip the future A320 Airbus.

The USINE NOUVELLE Assessment

The poor present financial situation of the SNECMA is temporary, and can be explained therefore by the simultaneous launching of two new lines, and above all by the cost of access to the civilian market. The enterprise will be in difficulty up to the 1,000th or 1,200th engine. It will not sell many replacement engines, and overdrafts and losses will be at their maximum. Beyond that time, it will begin to enjoy the benefits of modernizing its production tools and will profit to the utmost from the advantages of the new programs.

Non-Consolidated Turnover Figures (in billions)

1982	1981
5,941	4,351

Exports

1982	1981
61.4%	51.7%

Net Balance (in millions)

1982	1981
-44.6	-65.4

Personnel

1982	1979
12,595	10,727

Investments (in billions)

1983 (estimate)	1982
0.710	1.064

CdF-Chimie

The CdF-Chimie has not yet signed its plan contract with the public authorities, since certain pending "files" prevent this, particularly those pertaining to the takeover of the General Fertilizer Company (GESA) by the APC fertilizers division, and certain PCUK and Chloe activities. This is reflected in substantial financial requirements which can be estimated at 5 billion francs.

The CdF-Chimie will also have to settle the problem of the survival of Carling, particularly with regard to the steam cracking installations (a very delicate issue at a time when there is talk of shutting down 17 such installations in Europe), and then proceeding to integrate the activities taken over from the PCUK.

The USINE NOUVELLE Assessment

CdF-Chimie is likely to suffer from a very difficult treasury situation preventing it from correcting past problems and preparing for the future. On the other hand, if the group becomes the leading supplier of fertilizers in France, it will be faced with harsh competition on this market and the eternal problem of the price of gas. On the other hand, CdF-Chimie can rely on several strong points: excellent technology for linear polyethylene; a substantial capacity for ABS resins, and a well-structured paints sector, which has just been expanded to include inks with the inclusion of Lorilleaux-LeFranc, a fine business turned over by PUK.

Consolidated Turnover Figures
(in billions)

1982	1981
12.6	11.8

Exports

1982	1981
--	38%

Net Balance
(in millions)

1982	1981
-1,200	-1,213

Personnel

1982	1979
11,650	15,726

Investments
(in billions)

1982	1981
--	271

Metallurgical Union of the North

The tasks assigned by the plan contract include reestablishing the competitive capacity of the enterprise, correcting the financial situation, in particular by reducing the financial charges to 5 percent of the turnover total by 1986, and guaranteeing a lasting potential for employment in metallurgy and the new activities. The investment program (steel plan) for 1982-1986 comes to 9 billion francs (1982 value).

The reorganization and investments program was launched in 1982, in accordance with the plan contract, and 2.95 billion of the firm's own funds will be allocated in 1983. An arrangement for creating jobs on the reorganized sites has been set up (regional industrial development companies). The company staff is to be reduced by approximately 4,000 persons by the end of the plan.

The USINE NOUVELLE Assessment

Marked deterioration of the results in 1982 with the development of a rate of factory operations far below the estimates in the Judet report beginning in the second half of the year. The financial cost increased, reaching 10 percent of the turnover total. No hope of substantial recovery in 1983.

The items on the agenda are a revision of the schedule, a redistribution of the heavy investments, and a search for a better synergic relationship with the SACILOR in the long and special steel products sectors. It does not appear that the general goal of recovered competitive capacity by 1986 can be achieved without new decisions to halt production at the long product factories in Lorraine with particularly serious deficits, and a corresponding supplementary financial effort on the part of the public stockholder.

Consolidated Turnover Figures
(in billions)

1982	1981
27.2	24.7
18.5	17.6

Exports

1982	1981
--	--
35%*	42%**

Net Balance
(in millions)

1982	1981
--	--
-5,000	-3,900

Personnel

1982	1979
48,595	--
30,641	40,200

Investments
(in billions)

1983 (estimate)	1982
--	--
<1	1

Group figures and the second company figures.

* Including 16 percent for third countries.

** Including 23 percent for third countries.

SACILOR-SOLLAC [Continuous Rolling Milling Company of Lorraine]

The tasks assigned by the plan contract include reestablishing the competitive capacity of the enterprise, correcting the financial situation, in particular by reducing financial costs to 5 percent of the turnover total by 1986, and

guaranteeing an enduring employment potential in metallurgy and the new activities.

The reorganization and investments program began in 1982, in accordance with the plan contract, and 3.5 billion of its own funds will be allocated to the company in 1983. A job development arrangement is functioning at the reorganized sites (regional industrial development company). The personnel of the group is to be reduced by 10,000 units by 1986. Reduction of the total to 7,000 units is under study.

The USINE NOUVELLE Assessment

Two problems, to some extent related, currently lack an answer. Should the production of cast iron from local ore be continued in Lorraine, where the lack of competitive capacity is underlined by the new decline in the price of imported ores, and should the group replace its blast furnaces and integrated steelworks with electric steelworks? Which long products plants in Lorraine should further be sacrificed because of the mediocre European market prospects for these products in the medium time range and the reorganization requirements formulated by the European Community?

Despite the efforts of the group, it seems hard to see how the desired re-establishment of the major balances of the company by the year 1986 could come about without an "overall plan for Lorraine," with the shutting down of further metallurgical sites, while at the same time giving impetus, more vigorous and effective than that in the past, to the establishment of substitute industries.

Consolidated Turnover Figures (in billions)

1982	1981
28.6*	17.6
--	11.7

Exports

1982	1981
32%	--
38%	46%**

Net Balance (in millions)

1982	1981
-3,700	-2,800
--	-1,900

Personnel

1982	1979
56,743	38,844
22,210	29,878

Investments
(in billions)

1983 (estimate)	1982
1.7	--
--	0.4

The first line shows group figures and the second those for the SACILOR-SOLLAC company.

* Annual comparisons on the group level are not indicative because in 1982 Ugine Steels, the SAFE, the SMN, and the assumption of majority control of the Dilligen Steel Works (Sarre) were included. The personnel of this last-mentioned company is not included in the table.

** Including 25 percent, outside the ECSC [European Coal and Steel Community].

Six Groups Profitable

Paris L'USINE NOUVELLE in French 2 Jun 83 pp 120-123

[Article by Patrick Piernaz, Philippe Douroux, Eric Walther, Claude Amalric and Claudine Meyer]

[Text] Of all the groups in the nationalized sector falling within the field of this study, only the CGE [General Electrical Company] and Dassault showed better results in 1982 than in 1981. The four other members of this club of six profitable enterprises, an increasingly elitist one, did indeed show a profit, but a smaller profit than in 1981. The difference for ELF was very little (3.6 as compared to 3.7 billion), as was the case with MATRA [Mechanics, Aviation and Traction Company] (154 as compared to 157 million), but the difference was substantial for Saint-Gobain (250 as compared to 450 million), with the ISOVER [foam glass insulators] losses, estimated at 400 million, weighing heavily. It should be noted that of the six profitable groups, two belong to the old nationalized sector (ELF and the SNIAS [National Industrial Aerospace Company]), two were nationalized in 1982 (CGE and Saint-Gobain), and, finally, the last two (Dassault and MATRA) came into the public sector through "the back door," since the state decided to become the majority stockholder in these two enterprises.

The Profitable Groups in 1982
(in millions of francs)

ELF-Aquitaine	+ 3,600
Dassault	+ 321
Saint-Gobain	+ 250
CGE	+ 248
MATRA	+ 154
SNIAS	+ 96

Dassault

Making the aircraft available to the air force such as to enable it to carry out its missions, while at the same time guaranteeing the industry the capacity of retaining its rank in international competition until the end of the century--these are the general purposes set forth by the minister of defense when the decision to launch the ACX experimental future combat plane was announced. This was a statement showing continuity in the management policy of the Dassault-Breguet company, which remains a company in private law, with the following distribution of capital: state--46 percent; Marcel Dassault--49 percent; and public--5 percent, with 0.78 percent shareholding for the AMD-BA. The state nonetheless controls 55 percent of the stockholders votes.

The general strategy of the enterprise remains basically the same: to continue the battle, foot by foot and contract by contract, against competing foreign military aircraft suppliers, mainly American ones. 1982 was a record year for orders obtained, with a total of 20,677,000,000 francs, including 18,624,000,000 for export. The total figure for export orders was multiplied by 2.33 in comparison to the average for the past 4 years.

In 1982, on the other hand, the company obtained no orders from the state for armed aircraft, and government orders declined to only 10 percent of the total. At the same time, civilian sales accounted for only 5.2 percent of the total orders obtained. Thus Dassault-Breguet owes its healthy situation today almost exclusively to exports of military aircraft.

The indicators of the health of the enterprise this year will thus depend on actually obtaining the orders for which the military planning law provides where the Mirage 2000 is concerned, with 56 orders scheduled for 1984-1985 and 109 for 1986-1988, not to overlook the 16 Atlantic 2 orders for the navy. The most sensitive indicator will remain the contracts with foreign countries for Mirage 2000s, particularly those now being negotiated with Greece (60 planes may be ordered from the French firm). Egypt, for its part, is studying the possibility of ordering 20 additional Mirage 2000s. The development of sales of the Mirage 2000, of which 195 are now on order--for France (55), Egypt (20), India (40), Peru (26), United Arab Emirates (36), and Abu Dhabi (18)--constitutes a quite positive element.

The USINE NOUVELLE Assessment

The company needs to find itself a European partner to increase its series and share the cost of developing future aircraft. For the ACX airplane, the MBB [Messerschmitt-Bolkow-Blohm] or Dornier companies would be excellent partners.

It should be noted that while there was no increase in the turnover total for 1982, the net balance improved slightly. Dassault is doing well.

Non-Consolidated Turnover Figures
(in billions)

1982	1981
12.6	12.4

Exports

1982	1981
77%	77%

Net Balance
(in millions)

1982	1981
321	295

Personnel

1982	1979
16,280	15,553

Investments
(in billions)

1983	1982
0.340	0.250

General Electrical Company

The goal of this company is to achieve a consolidated turnover total of 135 billion francs by 1987. To do this, and within the framework of the plan contract signed with the public authorities last 24 February, the CGE (323 companies consolidated) has established three directions of priority development: computer-integrated manufacturing (robotics, automation, industrial data processing); electronic office equipment, based on telecommunications; professional electronics and optoelectronics. These are three axes which will have to rely on the strengthening of the group in its traditional sectors of activity.

To illustrate this strategy (balanced development without disengagement), 1982 was a particularly indicative year. The sectors in which the turnover total advanced the most were cables (+43 percent), business and engineering (+36 percent) and telecommunications (+15.7 percent), all sectors with which the CGE is perfectly familiar.

In the medium time range, these directions should be reflected in the rationalization of industrial activities both in the best-known sectors (naval construction, electromechanics) and those in the vanguard (computer-integrated manufacturing, optoelectronics).

The USINE NOUVELLE Assessment

Computer-integrated manufacturing, electronic office equipment, professional electronics--if the likelihood that the CGE will succeed in these three sectors seems unequal, the investment capacity and financial health of the group constitute good springboards. The CGE is the nationalized group which got through the year 1982 in the best condition. Launched along the path of profit by the Ambroise Roux-Georges Pebereau team, the CGE found its course with Jean-Pierre Brunet and Georges Pebereau. The turnover figure is up 16 percent and order prices have increased by 26 percent. In active sectors, CGE is succeeding in improving its results, and in exports it is setting records. The health of the CGE is giving color to the rather grayish balance of the competitive nationalized sector. To note this situation is not enough. To improve its results, to invest and to innovate, the group needs money: Will the capital allocation of 150 million francs be enough?

Consolidated Turnover Figures (in billions)

1982	1981
65.7	56.6

Exports

1982	1981
41%	33.1%

Net Balance (in millions)

1982	1981
248.2	238.3

Personnel

1982	1979
192,000	149,500

Investments (in billions)

1983	1982
5	5.4

ELF-Aquitaine

Since the 9th Plan is to include a decisive energy aspect, ELF-Aquitaine will await its completion and then its approval before signing its plan contract. It now seems probable that the organization of the chemical sector, the establishment in America of the group headed by Albin Chalandon, and the conversion of refining tools will play a considerable role therein.

The financial arrangements which are expected to culminate in the merger of ATO-Chimie, Chloe and a part of PCUK are now in the final negotiation phase. Albin Chalandon has stood firm on an investment limited to a billion per year for that group, over 3 or 4 years, and the participation of a foreign partner in the program, which would make ELF the number one firm in French heavy chemistry.

Despite the modest results achieved in the United States by Texasgulf, attributed to a temporary shrinkage on the phosphates market, ELF is not abandoning its activities across the Atlantic, and plans to persevere in the exploration and parapetroleum sectors.

As is the case with its counterparts, the losses recorded in the refining sector (some 2 billion francs) hardly leave ELF any margin for making the investments needed between now and 1990 in order to undertake an overall conversion of its refineries, which have substantial surplus production capacity. The 34 percent indebtedness level of the group, which has reached a limit which should not be exceeded, according to leading officials of the group, should also be watched.

The USINE NOUVELLE Assessment

The possibility of continued leadership of ELF-Aquitaine by Albin Chalandon has for all intents and purposes been approved. ELF-Aquitaine is in fact to pre-empt for 2 more years over the fate of a group which is in better health than the majority of the public establishments and nationalized enterprises. The sponsoring authorities are thus counting on continuity for ELF, which doubtless holds an excellent hand with refined chemistry (drugs, cosmetics). On the other hand, the prospects for the reorganization of heavy chemistry, described as a "national duty," do not appear to be so good, and the light at the end of the tunnel is far from in sight where refining is concerned.

Consolidated Turnover Figures (in billions)

1982	1981
114.8	104.4

Exports

1982	1981
*	*

Net Balance (in millions)

1982	1981
3,600**	3,700

Personnel
(Group)

1982
59,050

1979
44,400

Investments
(in billions)

1983
18

1982
15

* The turnover figure for export is difficult to establish for ELF-Aquitaine. The group reports bringing 30 billion in foreign exchange into France.

** The net 1982 balance is exceptional to the extent that it shows the return of 1.6 billion francs of a fund allocated to regularize the situation of ELF in Iran, which was completed in the course of recent months. A comparison of the results in real terms shows a serious reduction in 1982 as compared to 1981.

Mechanics, Aviation and Traction Company

"I stayed, and that means that the autonomy of MATRA has been preserved," Jean-Luc Lagardere commented less than two months ago. He was speaking of the role of the state as a majority stockholder in the group. It is a fact: there has been no unnecessary disturbance to a complex system which is functioning. And the MATRA is still functioning well, despite a very mediocre 1982 consolidated balance figure, in terms of the earlier figures: 20 million, as compared to 157 in 1981. This occurred despite excellent performance in the military, space and transportation sectors. The main causes of the losses were automobiles (120 million francs), including such affiliated firms specializing in electronics as Jaeger and Solex, an equipment supplier, and Manurhin, where the surprise was much less pleasant than expected. The caution evidenced concerning losses here is due to the fact that the assessment has not yet been completed.

The USINE NOUVELLE Assessment

Despite the difficulties expected in 1983 in the same sectors, the enterprise seems confident. The profit estimates for this year point to about 160 million francs. The disappointing 1982 result would thus then represent the lowest point for MATRA, which obviously does not plan to get into the red. And not without reason, because the reorganization of Solex and Jaeger is complete. Thanks to the agreements with Seiko (wherein one can see an equivalent reduction for Thomson-JVC), the MATRA clockworks division has been able to sell 100,000 watches on the American market, while Jaz has not sold a single one in 10 years. And the microelectronics sector in particular is the focus of a

large part of MATRA's hopes. A diversification into software will be effected with the establishment of Ediciel, a MATRA-Hachette GIE [Economic Interest Group]. The goal is to create programs in French based on the machines in most widespread use, with voiceprints.

It is fascinating to note the measured but real optimism of MATRA in the sectors in which other industrial enterprises are suffering their greatest losses. This does not mean that the gamble is foolish. For pity's sake, let us not upset the "MATRA system!"

Consolidated Turnover Figures
(in billions)

1982	1981
5.6	4.5

Exports

1982 70% (approximate)	1981 73.5%
---------------------------	---------------

Net Balance
(in millions)

1982	1981
154	157

Personnel
(Group)

1982	1979
5,900	4,700

Investments
(in billions)

1983 (estimate)	1982
0.420	0.382

Figures pertain to the mother company, excluding automobiles.

National Industrial Aerospace Company

To get through the present crisis without too much damage and to safeguard all its commercial opportunities in each of its sectors until recovery makes itself felt--these are the modest but realistic goals the SNIAS has set itself for 1983 and 1984. 1982 ended with a positive balance of +96 million francs, representing the fourth consecutive profit balance since 1979. This is proof that the recovery of the national enterprise is quite certain. "Today we have healthy finances and healthy programs, and we no longer have any aircraft which

generates a financial vacuum," says Andre Etesse, director of the aircraft division, in confirmation.

This situation, however, provides no safeguards against a collapse of the civil aeronautics market. Only the tactical missiles divisions, which produces the Hot, Milan, Roland, Exocet and other missiles, emerges in brilliant fashion. The most threatened division, that producing airplanes, is also the largest (7,770,000,000 francs in 1982, including 55 percent for exports). The dizzying advance of Airbus sales was stopped in its tracks by the aeronautics market crisis. In 1982, 17 Airbus planes were ordered (as compared to 46 in 1981), but 9 cancellations served to offset the 17 orders. Fortunately, there remain 120 Airbus aircraft to be delivered, which represents more than 2 years of work at the rate of 5 planes per month. But the most difficult period lies in the future.

The only consolation is the excellent beginning made in the sales of a small regional airplane, the ATR 42, of which 60 have been ordered. It will go into production in this period and will provide a precious work load for the workshops in Saint-Nazaire and in Toulouse. The main indicators for the coming years for this division will naturally be Airbus sales, but also the decision to launch the little A 320 Airbus, which will allow the European group to defend its capacity in the 150-seat aircraft sector.

The helicopter division (4,300,000,000 francs, and 80 percent for export), which has just turned out its 1,000th Ecureuil helicopter, is not exactly rejoicing either. It must cope with the collapse of sales on the offshore market, the shrinkage of the North American market and the leveling off of military budgets. On this last point, the decision by the Ministry of Defense to launch the new HAC-HAP helicopter program will be noted with satisfaction. The agreement with the MBB in Germany on cooperation (still pending) would guarantee this new program a chance of success.

The ballistics-space division (3,658,000,000 francs, with 10 percent for export) has not been overly favored either. The launching of the new vehicle intended for the strike force (SX) has been postponed. With regard to the Ariane, uncertainty continues pending the next launching at the beginning of June. And despite the excellent success in the telecasting sector (TDF1, Arabsat and Tele-X), the satellite market is still in a dormant phase. The tactical missiles division (5,504,000,000 francs, with 68 for export) is benefiting now from major sales made recently with the Middle Eastern countries. But it will be difficult to maintain expansion at the same rate. It remains to be seen how the customers will like the new missiles--the AS 15 TT (small Exocet), the AS 30 (laser), the Exocet SM 39, the supersonic antivessel missile (ANS), the much speedier successor to the Exocet, and in the longer term, the third generation antitank system, for the study of which a contract has just been signed with the British and the Germans.

The USINE NOUVELLE ASSESSMENT

Jean-Francois Martre, who succeeded Jacques Mitterrand at the head of the SNIAS, will have to keep a firm hand on the management of a company heavily

involved in the Airbus program, which will show a financial deficit until the delivery of the 750th plane, and with profits falling far short of those at Boeing, Grumman, and... Dassault.

Consolidated Turnover Figures
(in billions)

1982	1981
21.4	16.5

Exports

1982	1981
56%	51%

Net Balance
(in millions)

1982	1981
96	158

Personnel
(Group)

1982	1979
36,450	33,833

Investments
(in billions)

1983	1982
--	--

Saint-Gobain

Is the situation in which Saint-Gobain finds itself reflected in the 1982 figures? One might doubt that it is. Saint-Gobain has been passing through "an identity crisis" since the change in the strategic orientation in the electronics and data processing fields made in 1978 and then abandoned in 1982. The plan contract is unequivocal. But it fails to inspire a group seeking a new hunting ground equal to its ambitions and its means.

The plan contract commits Saint-Gobain to strengthening its traditional sectors of work, such as insulators, glazing, packaging, cast iron and paper-cardboard, but to finance its investments Saint-Gobain has about 2 billion francs available thanks to the sale of its majority stock in Bull, its withdrawal from Olivetti and the issue of a first lot of joint shares. And it will need money: the "traditional sectors" at Saint-Gobain, such as glazing, fiber cement, plumbing fittings, and above all wood and insulators, are suffering because of the lag in construction. Also, Saint-Gobain will continue the rationalization of its production in the realms of wood-paper, glazing and reinforcing fibers. In the wood sector, new possibilities are opened up thanks to the development

of the wooden frame house. In the insulation sector, the hope of recovery would lie in the advance of public sensitivity to acoustical comfort. In the malleable iron pipe sector, Saint Gobain plans to develop the domestic sanitation market and the export market for water supply networks. The excellent export prospects for fiber cement, involving Brazil and the developing countries, could compensate for the declining sales in Europe.

The development of BTP [public works and construction] and service enterprises (maintenance and control collection and processing of household trash from communities, management of building complexes, etc.) is likely to constitute one of the strategic orientations of the group. For export, Saint-Gobain is thinking of developing easily maintained local drilling stations. And to strengthen the Sobeas effort, in heavy exports in particular, it plans to take over control of another BTP firm.

The USINE NOUVELLE Assessment

Despite the regrettable losses reported by the ISOVER division, Saint-Gobain is a healthy group. It is precisely in order to safeguard this health that Roger Fauroux, the P-DG, plans to place emphasis on the quality of management and to plan for the future. "The group has two funds," Fauroux says. "The first is intended to rescue activities in peril, and the second should serve to prepare for the future."

Consolidated Turnover Figures (in billions)		
1982		1981
51		43.5
Exports		
1982		1981
16%		15%
Net Balance (in millions)		
1982		1981
250		450
Personnel		
1982		1979
139,000		147,000
Investments (in billions)		
1983		1982
--		3.6

5157
CSO: 3698/336

TRANSPORTATION

'VOLKSWAGEN' OF COMMUTER AIRCRAFT TO BE BUILT IN SWEDEN

Stockholm SVENSKA DAGBLADET in Swedish 18 Jun 83 p 21

[Article by Per-Erik Landqvist: "Aircraft Factory at Kockums Shipyard: 100 Million Kronor Project in Progress"]

[Text] Malmo--Before the end of June 1983, it will be decided whether Kockums shipyard in Malmo is to become the landlord for an entirely new aircraft factory that will manufacture what the designers are calling the "Volkswagen of airplanes." A 100 million kronor project in the long run.

"I consider the likelihood that the project will go off without a hitch as very good--indeed, as having an 80-percent chance. What is involved is an initial investment of 30 million kronor and a loan for an equal amount in the initial period," says Municipal Council member Nils Yngvesson (Social Democratic Party) of Malmo, who is working on the project in cooperation with Minister of Industry Roine Carlsson. Three hundred people will get jobs almost immediately, and approximately 500 will get jobs within a couple of years.

What is involved is a rather small, four-engine passenger aircraft with space for from 28 to 30 people. Each aircraft is going to cost approximately 16 million kronor. The new factory is to be able to finish one a month.

The aircraft will not be in competition with Saab's Fairchild. "That would be like comparing a Volkswagen with a Rolls Royce," Nils Yngvesson says.

There are already three prototype airplanes. They were built at a factory in Puerto Rico. The designer is Kim Ahrens, a Swedish-American who had trouble with the American financiers and then applied to Sweden and Kockums.

But the shipyard at Malmo was forced to decline with thanks.

Thumbs Down

It was Svenska Varv AB that turned thumbs down, saying, "We are supposed to build boats, not airplanes."

The project was regarded as having been written off a month ago.

But venture capital is available now. Definite information on the 30 million kronor that are to be available will be provided before 1 July, or perhaps by midsummer.

Then there will be no problems concerning the loan. Nils Yngvesson has just come home from the United States, where he borrowed 45 million kronor for the municipality of Malmo, and that can be used as municipal security.

There are no problems in getting available space for a workshop in the area of the Kockums shipyard. Seven years ago, 7,000 people were working there, and only a little more than half as many are still there. "Svenska Varv has no objections to having the space made available for manufacturing airplanes. The only thing Svenska Varv has said no to is being involved in the project," Yngvesson says emphatically. He is anxious to get the aircraft construction started quickly. There are 9,000 unemployed people and 4,000 people employed by the National Labor Market Board in his municipality. Unemployment in Malmo is 2 percent above the national average.



The 'Volkswagen of airplanes' is a four-motor, propeller-driven airplane with space for from 28 to 30 people. Negotiations are now going on regarding the construction of a factory to manufacture the airplane at the Kockums shipyard in Malmo, which can provide jobs for 300 people.

TRANSPORTATION

RENAULT'S FINANCIAL POSITION EXAMINED

Paris AUTO-INDUSTRIES in French 25 May 83 pp 1-2

[Text] Cleon (Seine-Maritime), 25 May (AFP)--The Renault group practically doubled its losses in 1982, with a deficit of 1.28 billion francs compared to 675 million in 1981, but held onto first place in Europe for private vehicles with 14.5 percent of the registered cars compared to 13.7 percent in 1981.

The group's financial director Mr Pierre Souleil, who presented the group's financial report Wednesday at the Cleon factory, emphasized that the increase in losses was due to a sharp increase in productions costs, as well as to the blockage of retail prices in France, the cost of which Renault calculates to be 500 million francs. The cost of the strike at the Flins factory has not yet been evaluated.

This report "does not particularly worry us" Renault's financial director stated. "We have a respectable average in comparison to our European competitors." The large European auto makers lost a combined total of 6.4 billion francs in 1982 as opposed to 5.65 billion in 1981, in contrast to American auto makers who went from a loss of 7 billion francs to a profit of two billion during the same period, as a result of social measures termed "brutal" by Renault.

Renault management is particularly delighted about the 8.6 percent rise in the sales volume (18.4 percent in value), to 104.1 billion francs. They also stress the fact that an investment level of 8.6 billion francs was maintained in 1982, compared to 8 billion in 1981, or 8 percent of the sales volume.

The national administration of Renault factories, which suffered especially in the financial area with a loss of 2.563 billion francs compared with 875 million in 1981, on the other hand, strengthened its commercial position. Renault captured 40.1 percent of France's private and small utility vehicles market in 1982 and took first place in the European private vehicle market.

Renault indicates that the increase in sales volume made by the French group (57.1 billion) came to 22.9 percent, while sales in Western Europe (30.8 billion francs) increased by 19 percent. In North America, the introduction by American Motors, 46 percent controlled by Renault of a modified version of the "R-9", the Alliance, accounted for a doubling of sales, to 4.2 billion francs (Mexico included).

For 1983, the Renault group "has noted a certain recovery in the automobile industry for the last month." However, Mr Souleil points out that "Despite this improvement, we are not very optimistic for the current financial period, whose outcome could be serious." The automobile division represents the administration's main area of activity: 76.3 billion francs in sales volume (+2.8 percent), of which 53.4 percent is in France.

Moreover, Renault does not expect a short term recovery for the industrial vehicle division which showed a 745 million franc loss in 1982 or sales of 15.5 billion francs (up 15.1 percent). The truck market is "very difficult, even rotten in France" the administration states.

In spite of the difficulties encountered in 1982 which increase the long-term indebtedness of the group to 22 billion, Renault is pinning its hopes for the future on the continuation of its investment effort in order to reach the three year goal it has set for itself: 2.5 million vehicles produced worldwide and 7 percent of the world market as opposed to the present level of 6.5 percent. Moreover, the group is not reconsidering the plan it contracted with the Ministry of Industry in February 1983, which projects investments of 28.5 billion francs from 1983-1985, of which 18.5 billion will be in France.

According to the 1982 balance sheet, the contribution of the industrial enterprises division amounted to 5.3 billion francs (up 20.3 percent) and that of the financial subsidiaries reached 8.6 billion francs (up 10.5 percent). The latter was the beneficiary of 428 million francs. Renault is going to continue to make a special effort in industrial investments, in order to continue updating its line, modernization and automation of its factories. The group has already invested 13.3 billion francs in the automobile division alone between 1980 and 1982, of which 10.8 billion were for auto factories and 2.5 billion for automobile subsidiaries. "Our objective is to modernize and reindustrialize one factory each year."

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CSO: 3698/353

TRANSPORTATION

VOLVO PRESENTS PROTOTYPE AUTO FOR YEAR 2000

Stockholm SVENSKA DAGBLADET in Swedish 17 Jun 83 p 23

[Article: "Concentration on Aluminum and Plastic: An Energy-Saving Volvo Car for the Year 2000"]

[Text] An automobile that consumes 0.4 liters per 10 km, in which the passengers in the back seat ride backward and the supporting structures are of aluminum and that is propelled by a turbocharged diesel engine is what Volvo's research workers picture to themselves for the year 2000.

Since 1979, a group of research workers at Volvo has been studying what materials and production techniques are suitable for the automobiles of the future. A ready-to-drive prototype was presented at the Volvo establishment at an international meeting of research workers on Thursday. Definite objectives for the study, which is called the Light Component Project, were set up when it was begun. They were as follows:

--The automobile's total energy requirements would constitute a central point, and that would include materials, manufacturing, the use to which it is put and recycling.

--Fuel consumption could not exceed 0.4 liters when the vehicle was used for different kinds of driving, and the maximum weight was set at 700 kilograms.

--The automobiles were supposed to provide space for two people at at least 500 liters of baggage or two extra passengers, going on the theory that family size is going to decrease in the future.

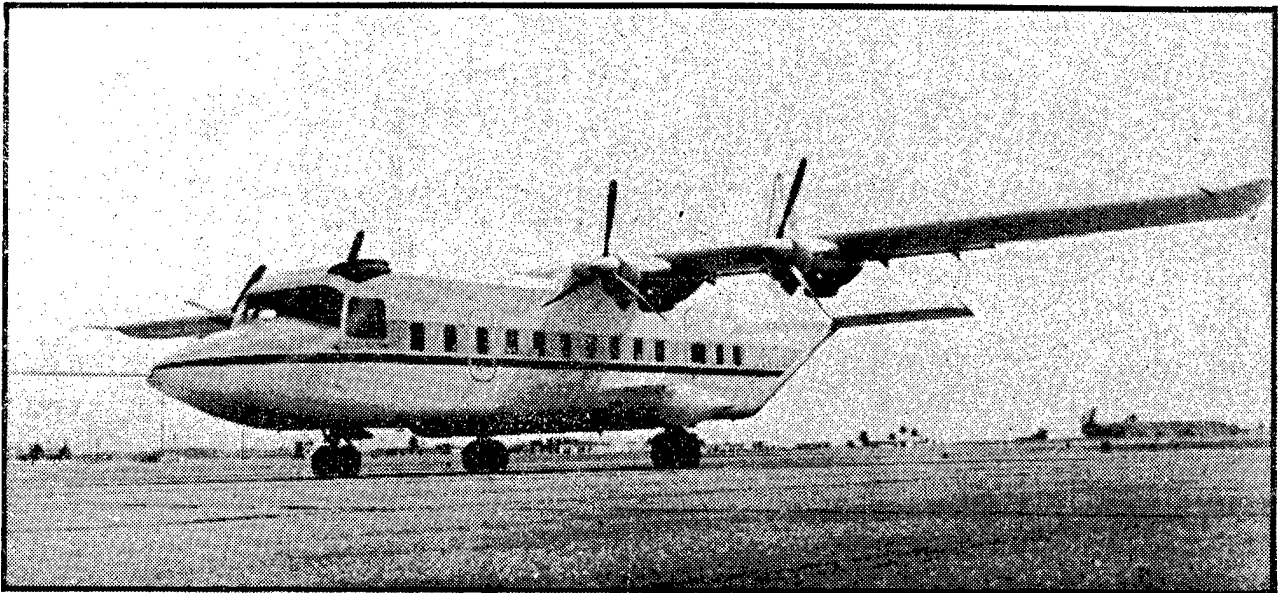
Energy-Saving

The result has been an automobile whose total energy consumption is approximately half that of today's intermediate-size automobiles. A direct-injection, turbocharged diesel engine is regarded as the best alternative in combination with either an infinitely variable gear bod or a five-speed manual box.

The chassis is made of aluminum and a large part of the outer panels are made of plastic.

It is believed that some parts can be assembled by the sub-contractors or that this can be accomplished simultaneously with the final assembly.

Volvo is not planning any series production of the Light Component Project car, but experience gained will be applied to the company's production development program on a continuous basis.



This is what the Volvo of the year 2000 will look like, according to Volvo's research workers

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CSO: 3698/362

TRANSPORTATION

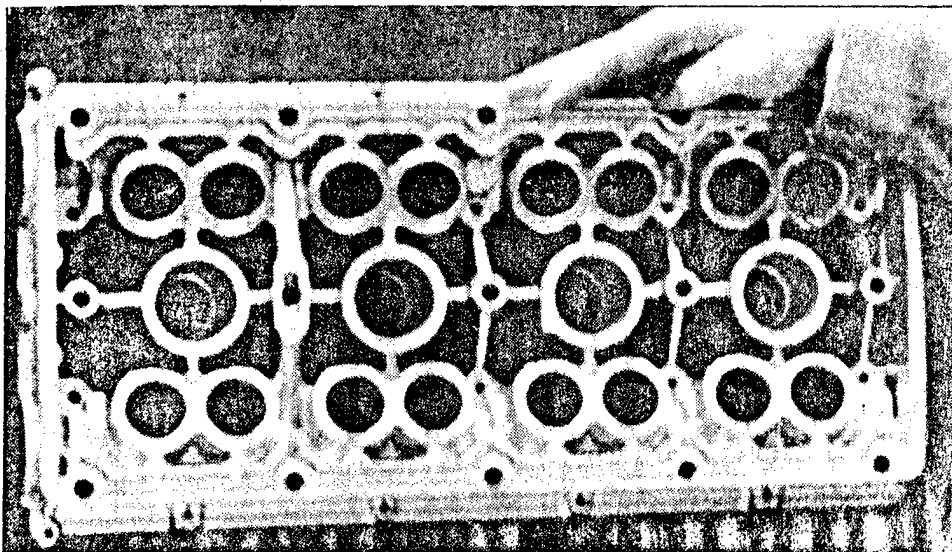
VOLVO'S NEW ENGINE HAS FOUR VALVES PER CYLINDER, DOHC

Stockholm NY TEKNIK in Swedish 30 Jun 83 p 3

[Article by Ulf Bergmark]

[Text] NY TEKNIK can here show the first picture of Volvo's new top secret passenger car engine. It is a four-cylinder roughly 2-liter model with 16 valves and it is very energy-efficient.

Volvo is not releasing any facts about the new engine. The firm's technicians are working silently in an effort to catch up with Saab's head start. Saab will be the first in Europe with a modern mass-produced engine with four valves to each cylinder. Volvo may well be the second.



The cylinder head is the radically new and most interesting feature in the Volvo engine. The spark plugs are located in the four holes in the middle, the valves in the 16 holes along the sides.

The new engine will be presented in the fall, half a year after Saab unveiled the details of its 16-valve engine. Volvo's engine is a further development of the B-23 engine with a cylinder volume of 2.3 liters. That is what most of the Swedish-manufactured Volvo cars are equipped with.

No Alternative

The B-23 engine with only one overhead camshaft and two valves per cylinder is an optimal compromise between the current demand for energy-efficient engines and environmentally acceptable exhaust emissions. But when stricter requirements on exhaust emissions are imposed while at the same time requirements for fuel-efficient cars increase, there is only one alternative; to build engines with four valves per cylinder.

"All the car manufacturers in Europe are experimenting with 16-valve engines. There is no alternative," said Per Gillbrand of Saab in Sodertalje. He is one of the main people behind Saab's 16-valve engine.

The biggest advantage with four valves per cylinder is that the combustion chamber can be constructed optimally. It is compact and has less heat-conducting surface. The distance between the centrally located spark plugs and the outermost sections of the combustion chamber is short and combustion occurs uniformly and quickly. This reduces the risk of knocking and the compression ratio can be increased. The mixture of air and fuel can also be made leaner, which means that the engine uses less gasoline.

Loss Reduced

In addition there is less throttle loss, since four valves make up a bigger "hole" through which the air-fuel mixture can pass. Thus a number of factors work together to make the 16-valve engine thriftier without reducing driving quality or efficiency. Saab announced that consumption is reduced by 10 percent, while at the same time efficiency is increased! Volvo's new engine displays about the same energy gains.

The principle of four valves per cylinder is not new. But it is only now that emission and energy requirements are getting stiffer that car manufacturers are being forced to turn to this more expensive and more complicated design for a standard engine.

Volvo will first install the engine in its most expensive cars. That is the customary way of introducing something new, so that the manufacturing costs per unit can be brought down. Saab is doing the same thing and will only put 16-valve engines in its turbocars. But eventually both Saab and Volvo will install the engines in their cheaper model lines also.

A large part of the development work has gone into adapting the engine to production. The cylinder head is complicated to cast and the number of work operations must be minimized. It has taken 10 years for the Saab technicians

to develop the 16-valve engine and 80 percent of the work time has gone into production adaptation.

Volvo is not yet through with its development work, while Saab will be testing at its new highly-automated auto factory in Sodertalje after the vacation period. A French manufacturer will cast the cylinder head for Saab. Volvo is considering placing the manufacturing order with a Swedish subcontractor. If so that will be the first time an aluminum cylinder head is manufactured in Sweden.

6578

CSO: 3698/366

TRANSPORTATION

DORNIER PUTS 'NEW TECHNOLOGY WING' ON AMPHIBIAN

First Flight Secret

Zurich NEUE Zuercher ZEITUNG in German 29 Jun 83 p 33

[Text] The initial flight was kept strictly secret by Dornier. It took place on 25 April on the plant airport in Oberpfaffenhofen at Munich, so to speak with exclusion of the public. The Do-24TT did not appear at the Paris Air and Space Exhibition in Bourget, disappointing many, predominantly older, visitors. On the one hand, Dornier did not want to take a risk at this early stage of flight testing and, on the other hand, the Do-24 should not be the carrier of nostalgic feelings, but a carrier of technology; consequently the designation Do-24TT.

In the meantime, the Do-24TT has behind it a good 20 flight hours, and the expectations for this experimental aircraft have up to now been fulfilled. Presumably in August, the Dornier 24TT will face a decisive test: It will fly to Kiel and will have to prove its seaworthiness in the Ostsee.

Old Fuselage - New Wing

The construction of the Do-24 was instigated in 1935 by the Dutch Navy, which needed a modern long-distance seaplane for use in Indonesia, for many purposes - for remote reconnaissance, for emergency sea service, or as a transport aircraft. The initial flight took place in 1937. During the Second World War, the Do-24 proved itself in many respects. Before the end of the war, Germany delivered Do-24s to Spain in the year 1944. There they continued to be used until 1970. Then, Dornier could purchase back a Do-24. However, it was not accorded a peaceful life as a museum piece as had originally been anticipated. The old fuselage, to which seawater and corrosion had done remarkably little damage during the course of a quarter century, was thoroughly overhauled. On the other hand, the wings and propulsion system are completely new. As regards the wing, one took into account the aerodynamic shaping and the new technology of the support surfaces of the Do-228, with the propulsion system one decided in favor of three propeller turbines from Pratt and Whitney PP-6A-45, each with a power of 1125 HP (839 KW).

The Tasks

The objective of the experimental program comprises the following key points: increased capability under high seas compared to previously known seaplanes;

deployment flexibility on the basis of amphibian design; improvement of performance and economy in comparison to previous seaplanes and amphibious aircraft by novel aerodynamics and propulsion systems; testing a larger design of the support wing for new technology, which was developed by Dornier, in a simplified construction mode, to reduce production costs, and finally the testing of modern propeller turbines for deployment on the high seas.

At this time, mass production is still far away. An amphibious aircraft with high-seas capability could undoubtedly be expected to have some demand. Indeed, it would be suitable for a wide spectrum of tasks; as an example, one need only mention the monitoring of fishing and national zones. Dornier has been leading for decades in the construction of seaplanes. Nevertheless, there are voices at Dornier who are skeptical about the current program.

New Wing, Materials Used

Stuttgart FLUG REVUE in German Jul 83 pp 66-67.

[Unattributed Article]

[Excerpts] The long-term objective is an economical amphibious aircraft that is suitable for all-weather: the technology carrier Dornier Do 24 TT, which is currently being flight tested, combines the advantages of conventional and new technology.

Building on the fuselage of a Do 24-T2, which was retired from service in Spain in 1971, a modern propeller turbine and new support surfaces with a new technology, already successfully used in the Do 228, are to be used to investigate whether the amphibian aircraft, so frequently pronounced dead, does not still have a chance for the future.

The proven profile is characterized by low resistance both in ascent and in cruising and by high maximum lift when the flaps are retracted or extended. The simple, rectangular wing received triangle wing tips, which were selected on the basis of wind tunnel measurements. A three-part single-slit Fowler flap extends between the transverse rudders over a total length of 17.8 meters at the rear edge of the support wing. Thus, calculations for a three-engine operation with a starting weight of 12 tons, yielded a starting roll length of barely 300 meters with a runway start and less than 200 meters with a water start. The old Do 24, a racially pure seaplane, needed almost twice as much "start up".

The center piece of the technology carrier (TT) is the wing, which consists of a structure that has been tried out with the "support wing of novel technology" (TNT) and nine conventional Baldachin struts. The integral-machined, rectangular spar box consists of NC-machined panels with integrated rib straps, stringers, cross straps, and webs for the spar connection. The spar webs are likewise NC-milled, and have integrated posts and hand holds for final assembly and for access to the fuel tank. Since many components are the same or similar, the support wing can be produced economically.

With a series of components for the wing, glass or carbon-fiber reinforced plastic were utilized. The 24 end box sections and the wing tips are made of carbon-fiber reinforced plastic/glass fiber reinforced plastic sandwich construction. The strut transition coating between the struts and the lower side of the wings, the upper side of the fuselage, and the landing gondolas, the transverse rudder and landing flap bearing arm coating were all fabricated of glass-fiber reinforced plastic.

Only when flight tests are concluded and the results are promising, will Dornier think about utilization. In any case, demonstration flights are anticipated, which will provide information concerning the marketing possibilities of an amphibious aircraft.

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